COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM
MEETING NOTES
January 10, 2001
CORPS OF ENGINEERS NORTHWESTERN DIVISION OFFICES – CUSTOM HOUSE
PORTLAND, OREGON

TMT Internet Homepage: http://www.nwd-wc.usace.army.mil/TMT/index.html

FACILITATOR'S NOTES ON FUTURE ACTIONS
Facilitator: Patricia McCarty

The following is a list of items the Technical Management Team (TMT) discussed at its last meeting that may require future action or discussion.

New Member: Welcome to Dave Wills, the new TMT representative for the USFWS. Marv Yoshinaka retired on January 3rd, and Dave will sit in as the rep until the FWS determines who the permanent rep will be.

Current system conditions: Rudd Turner stated that the action agencies are operating the system to attempt to provide for chum needs, energy needs and conserve water for the spring migration, which may become more difficult if the water forecasts are accurate. Since the January 5th TMT conference call on this topic, the Bonneville flows have ranged from 129 Kcfs to 137 Kcfs, and the tailwater elevation has ranged from 11.7 – 12.5 feet. The COE and BOR presented more information on the water supply forecasts and potential impacts of various Bonneville flows on reservoir elevations. Both agencies are very concerned about meeting spring refill levels and suggested that in order to do so Bonneville flows need to be reduced soon. Contact Rudd Turner and Pat McGrane for copies of the model runs and projections.

Christine Mallette reported that as of the meeting date no chum redds were dewatered, and that 3 new chum were observed downstream from Hamilton Island; new redds are expected.

The group had a lengthy discussion on changing the Bonneville flow levels and/or the tailwater elevation. The salmon managers were unwilling to agree to a reduction in tailwater elevation or flow at this time. NMFS and the salmon managers will continue to assess the water supply forecasts and the information provided by the action agencies on the potential impacts to spring refill.

> **ACTION:** The COE extended an invitation to TMT members to come in and see how the SSARR runs are developed. This is done every Tuesday morning. If you would like to do this, please contact Christine Mallette, who will coordinate with the COE.

Recommended operations: NMFS recommended that the tailwater elevation be reduced to 11.7 feet, and at a request from the BOR, NMFS agreed to a reduction in the daily average flow to

130 Kcfs, except as needed when the tide is low. During periods of low tides, the day average flow may be greater than 130 kcfs to the extent needed to maintain a tailwater elevation of 11.7 feet.

ACTION: The issue will be discussed again in a TMT conference call on Wednesday, January 17th, at 2 p.m.

Northwest River Forecast Center: Tom Fero and Harold Opitz gave a short presentation on how the water supply forecast is developed.

ACTION: The RFC extended an invitation to TMT members to go out to the RFC office and learn more about the development of the forecasts. If you would like to do this, please contact Cindy Henriksen, and a TMT field trip can be arranged.

CRITFC climate forecast presentation: Kyle Martin gave a brief overview of his submission to TMT, which encourages the consideration of climate forecasts in flow decisions. Kyle asked TMT to review the materials provided and to contact him with any questions. He has offered to make a fuller presentation at a later TMT meeting if the group is interested.

Water Management Plan: Rudd asked the group to review the 2000 Water Management Plan and to give him any suggestions for changes as soon as possible. The COE will begin working on the draft for 2001, and expects to have a draft posted on the TMT page before the next meeting on January 24th.

ACTION: All members should review the Draft 2001 Water Management Plan before the next meeting and be prepared to discuss it.

Next Meeting and Agenda

The next meeting is **January 24th, 2001, 1-4 p.m.** and will be in-person at the COE.

Agenda:

- Review fish needs, water outlook, power needs
- Review Draft 2001 Water Management Plan
- TMT / BPA visit or presentation on the power system
- Continuation of discussion of TMT decision making process

Meeting Minutes

1. Greeting and Introductions

The January 10 Technical Management Team meeting, held at the Customs House in Portland, Oregon, was chaired by Rudd Turner of the Corps and facilitated by Patricia McCarty. The following is a distillation, not a verbatim transcript, of items discussed at the meeting and actions taken. Anyone with questions or comments about these minutes should call Henriksen at 503/808-3945.

McCarty welcomed everyone to the meeting, then led a round of introductions and a review of the agenda.

2. Current System Conditions.

Turner reported that current system operational strategy is to meet energy loads and protect chum salmon spawning areas to the extent feasible, while conserving water for flow augmentation and power system emergencies in a below average precipitation and runoff volume situation. In other words, said Turner, the action agencies are attempting to strike a balance. We're also working on some long-term studies, the first iteration of which is available today.

Since Friday's conference call, said Turner, we have been trying to maintain a minimum Bonneville tailwater elevation of 12.0 feet, with the constraint that Bonneville outflow not exceed 140 Kcfs. Since January 5, flows at Bonneville have averaged between 129.4 and 137.9 Kcfs, with tailwater elevation varying between 12.0 and 12.5 feet. Libby and Dworshak are releasing minimum outflow, 4 Kcfs and 1.3 Kcfs, respectively, an operation that is expected to continue through February.

In response to a question from Jim Nielsen about low tailwater elevations at Bonneville, Scott Bettin said there are two tailwater gauges below Bonneville, one at Powerhouse 1 and one at the spillway. The spillway gauge is the one at which the official tailwater measurement is recorded at that project, said Scott Boyd, adding that the official tailwater readings at the spillway have all been in the 12.0-12.5-foot range. Checking the web site, it was indeed discovered that there were several hours on Saturday and Sunday, January 6-7, when tailwater elevation, as measured at the Powerhouse 1 gauge, sagged as low as 11.8 feet. I'll look into that discrepancy, said Turner. Boyd reiterated that the official tailwater elevation at Bonneville has not fallen below 12.0 feet since the operation discussed at Friday's conference call was implemented.

Moving on, Turner said that, at Dworshak, the current SSARR run shows elevation 1522 ft. at Dworshak at the end of January, 15 feet below that project's January 31 flood control elevation. At Libby, current project elevation is 2410; the SSARR run shows that project at elevation 2407 ft. by the end of January, eight feet below its January 31 flood control elevation. If a power system emergency occurs, these numbers could change, but that's the way the picture looks now, Turner said.

At Grand Coulee, we're currently at elevation 1257, said Pat McGrane; the final flood control elevation is expected to be 1283 on April 30, so we're well below that. We're 33 feet below the 85% confidence interval at Grand Coulee and drafting a foot a day, McGrane said. At Hungry Horse, our intent is to implement VAR-Q flood control elevations beginning immediately; that project is at elevation 3516 and drafting to meet flows at Columbia Falls. The current runoff volume forecast for Hungry Horse is only 75% of normal; the new BiOp says if the forecast is 80% of normal or less, minimum flow at Columbia Falls will drop slightly. In other words, both Grand Coulee and Hungry Horse are being drafted way below where they should be, according to the Biological Opinion, McGrane said; that situation is unavoidable at Hungry Horse, due to the need to maintain minimum flows at Columbia Falls. Given the

forecast, is it fair to say that Reclamation is very concerned about that? McCarty asked. Yes, McGrane replied.

There seems to be a disconnect between what the operating agencies and the fishery agencies are thinking about the current water supply forecast, McGrane said. Again, we've drafted Grand Coulee far below where it should be to achieve an 85% confidence of achieving its April 30 flood control elevation. He showed the following table of Grand Coulee's projected end-of-month elevations under various operating scenarios, based on Reclamation modeling:

Bonneville Flow	December	January	February	March
110 Kcfs	1267.7	1260.5	1271.7	1290.0
120 Kcfs	1267.7	1253.4	1256.9	1270.9
130 Kcfs	1267.7	1245.9	1240.7	1246.5
140 Kcfs	1267.7	1238.8	1222.2	1217.1

McGrane emphasized that these numbers are based on the most optimistic possible assumptions; actual elevations are likely to be lower. Again, he said, Reclamation is extremely concerned about the current forecast situation.

The January final water supply forecast came out yesterday, said Turner; we did both a SSARR and some HYSSR runs. What the final shows is 80.4 MAF, 76% of normal, at The Dalles for January-July; 48.8 MAF at Grand Coulee, 76.2% of normal and about 17 MAF, or 72% of normal, at Lower Granite. We're looking at flows similar to what we saw in the 1992 – 1994 period, in other words, he said; this is the third-lowest forecast in the last 11 years.

The water supply forecast assumes average precipitation during the forecast period, Turner said; so far in January, we're seeing anywhere from 1% to 65% of normal, depending on where you are in the basin. The Snake River plain, for example, has received no precipitation since January 1; overall, there have been no significant precipitation events east of the Cascades so far in January. If the current trend continues, subsequent water supply forecasts could be even lower than this one, Turner said.

In response to a question from Nielsen, Turner said the SSARR run assumes normal precipitation in the future. Moving on, he provided a table similar to Reclamation's of estimated Grand Coulee elevations under various operating scenarios, based on Corps model runs:

Bonneville Flow	January 31 GCL Elevation	February 28 GCL Elevation
110 Kcfs	1246 feet	1249 feet
120 Kcfs	1241 feet	1234 feet
130 Kcfs	1236 feet	1217 feet

Turner noted that these model runs are based on the most recent SSARR information and, in general, show lower end of month elevations that those presented by McGrane.

Turner then summarized the HYSSR model runs, based on the 60-year water record, that the Corps has developed to provide a slightly different viewpoint on future operations at Grand Coulee, Bonneville and McNary. What these model runs show, in essence, is that if Grand Coulee continues to be operated to maintain a minimum discharge from Bonneville of 130 Kcfs, there is only a 2% probability that Grand Coulee will achieve its April 30 flood control elevation. If, on the other hand, Grand Coulee is operated to achieve its April 30 flood control elevation, monthly average flows at Bonneville will fluctuate between 100 Kcfs and 270 Kcfs during the January-July period. If the system is operated to achieve an average flow of 130 Kcfs at Bonneville, said Turner, according to this model run, Grand Coulee's April 30 elevation is estimated to be 1261 feet, 22 feet below that project's end-of-April flood control elevation.

McGrane added that, if 130 Kcfs is maintained at Bonneville, flows at Priest Rapids are estimated to be 84 Kcfs in April, 132 Kcfs in May and 135 Kcfs in June, well below the BiOp flow targets at that project. Nielsen noted that, in an 80 MAF runoff year at The Dalles, it is unlikely that the April 30 flood control elevation will be achieved at Grand Coulee under any operational scenarios.

That is true, said Cindy Henriksen, but the point of this conversation is to ensure that everyone understands the impacts of the decisions and recommendations we're making now on our options during the spring and summer periods. McGrane added that Reclamation feels other projects besides Grand Coulee should be making more of a contribution to flows at Bonneville; the days of drafting only Grand Coulee are numbered, in other words, said McGrane.

In response to another question from Nielsen, Jim Gaspard of B.C. Hydro said Arrow is releasing 38 Kcfs through January; that may fall slightly in February and the first half of March. Beginning the second week in March, Arrow outflow will fall to about 20 Kcfs. Gaspard added that snowpack in the Canadian portion of the basin is about 85% of normal.

The salmon managers understand that we're in a poor water supply situation, Nielsen said; still, the operations shown in SOR 2001-1 are our recommendation, based on the needs of the chum. I just want everyone to be aware that the decisions we're making in January mean we're putting water down the river now that could be used for flow augmentation later this spring, Henriksen said. Or for a power emergency, Nielsen observed.

Chris Ross noted that the three model runs show end-of-February elevations at Grand Coulee varying between 1217 feet and 1256 feet, if Bonneville flows of 130 Kcfs are maintained; the group spent a few minutes discussing the technical differences between the SSARR, HYSSR and Reclamation model tools.

I appreciate the information you've provided, but perhaps we should move on to the operational discussion, said Nielsen. Christine Mallette reported on recent fieldwork at Ives

Island; WDFW had a crew out earlier this morning. At 11:30 this morning, they observed that there were no redds dewatered at this time, although two redds were very close to being dewatered. The crew also observed three new adults that have entered the area below Hamilton Creek. These fish are new to the area and have not yet begun spawning activities, Mallette said; in other words, there could be new redds in the area soon. The crew sampled for juvenile fish this morning, but the results of that survey are not yet available, Mallette said, adding that the survey results are available via the Fish Passage Center web site. It was observed that Bonneville tailwater elevations were in the 12.0-12.3-foot range this morning.

Ross said that, based on the information currently available, NMFS is ready to recommend lowering the minimum tailwater elevation at Bonneville from 12.0 feet to 11.7 feet, to allow an opportunity to save water while protecting the majority of the chum redds. McGrane noted that day-average flows are now capped at 140 Kcfs, and asked whether it is NMFS' intention to retain that cap. We haven't had to use 140 Kcfs at Bonneville to meet the 12-foot minimum tailwater elevation, as we heard earlier, said Ross – NMFS' expectation is that actual flows at Bonneville would be reduced somewhat if we go to a minimum tailwater elevation of 11.7 feet. Ross added that NMFS will be doing some additional analysis and will be watching the Ives Island redd surveys closely, and will make additional recommendations about the Bonneville operation over the coming weeks.

Mallette replied that, at a tailwater elevation of 11.7 feet, field crews have observed some dewatered redds. If the purpose is to protect the existing redds, she said, lowering the Bonneville tailwater elevation to 11.7 feet is not recommended at this time. Ross reiterated that NMFS' intention is to protect the majority of the chum redds while saving some water for use later in the spring period.

The Corps would like to consider dropping the flow cap to 130 Kcfs at Bonneville, said Turner. That should be adequate to meet the 11.7-foot minimum tailwater elevation for most hours, he said, although the tidal influence could cause the tailwater elevation to drop slightly below that level for a few hours on some days. McGrane said Reclamation agrees with the idea of dropping the maximum daily-average flow cap to 130 Kcfs. After a few minutes of discussion, however, no TMT consensus was reached on this issue.

In response to a question from McCarty, Ross said NMFS is not interested in sacrificing chum redds; the best available information is that a minimum tailwater elevation of 11.7 feet should be adequate to protect the majority. And that's over the next week, with the understanding that everyone will look closely at the flow, tailwater elevation and redd survey information between now and the next TMT meeting, he added.

Mallette said that maintaining a minimum tailwater elevation at Bonneville might make more sense than setting an average flow. Bettin agreed, noting that, while it does take some effort, BPA has been able to maintain the agreed-upon 12-foot minimum elevation over the past five days.

Can we make a decision on this today? McCarty asked. My concern is that if we maintain daily average flows in the current range, we're going to be in trouble, even at 130 Kcfs, said

McGrane – that's still too high. Hopefully we can drop flow at Bonneville; if we continue to average 135 Kcfs outflow at that project, we're going to have problems later. Every day counts, he said – as I said, Grand Coulee is drafting a foot per day.

I think we're at the same point we were last Friday, said Nielsen – WDFW does not agree with NMFS' recommendation, although I don't think at this time it makes sense to elevate this issue to IT. Mallette agreed, saying ODFW's position has not changed since last Friday's conference call. As Paul Wagner said on Friday, it is likely that this issue will be discussed at tomorrow's IT meeting, whether or not this issue is elevated, she said. David Wills said the Fish and Wildlife Service agrees with WDFW's and ODFW's position.

Nielsen reiterated that this discussion simply underlines the fact that the 2000 BiOp does not adequately address the needs of newly-listed species. We understand that this is a poor water year, he said; again, in an 80 MAF year, it is unlikely that the flood control refill targets at most projects will be met this year under any operational scenarios.

McCarty noted that the Corps has said that, if the TMT makes a conscious decision to use this Grand Coulee water now to maintain the viability of the chum redds below Bonneville, the Corps is willing to accept that, with the understanding that everyone acknowledge that this is a conscious decision to favor flows for chum over spring and summer flow augmentation. Nielsen replied that he would ask if the converse would also be true – if the salmon managers were to agree to sacrifice some chum redds now in order to save water for flow augmentation later in the spring, that the action agencies would guarantee that any water saved would be available for later flow augmentation. We don't know the future, Bettin replied – we couldn't guarantee that none of that water would need to be used before the spring flow augmentation period.

Turner said the Corps is willing to operate Bonneville to a minimum tailwater elevation of 11.7 feet; they would also prefer to cap Bonneville outflow at 130 Kcfs. McGrane said Reclamation recommends maintaining the lowest possible flow level that will not cause a power system emergency. He added, however, that Reclamation is willing to operate Grand Coulee to achieve a minimum tailwater elevation of 11.7 feet at Bonneville, at least for now. Bettin said BPA would prefer to set the minimum tailwater elevation at Bonneville at 11.5 feet; Ross replied that this would not be acceptable to NMFS.

So the recommended operation is to maintain a minimum tailwater elevation of 11.7 feet, but that there is no agreement on the 130 Kcfs flow cap at Bonneville? McCarty asked. Basically, yes, although we do expect to see flows drop as we implement the 11.7 minimum tailwater elevation, McGrane said. Turner clarified by saying that the Corps will operate Bonneville to a flow cap of 130 Kcfs, except as needed to maintain the 11.7-foot minimum tailwater elevation below that project during low-tide periods. Does that work, at least for now? Turner asked. No further disagreements were raised to this operation as described. And if something drastic is seen during Friday's redd survey by the fisheries agencies, said Turner, we can always discuss the situation via conference call.

3. New System Operational Requests (SORs).

On January 3, the Corps received SOR 2001-1. This SOR, supported by ODFW, USFWS and WDFW, requests the following specific operations:

- Immediately implement the requested conditions in SOR 2000-37 (maintain a tailwater elevation of 13.0 feet and an outflow of 142 Kcfs from Bonneville Dam).

This SOR was discussed during the previous agenda item.

4. Recommended Operations.

Recommended operations were described during Agenda Item 2.

5. Report on River Forecasting Methods.

Tom Fero of the River Forecast Center began this presentation by asking if there are general questions people would like to have answered, given the relatively short time available for this agenda item. How do you forecast the Canadian portion of the basin, and how is your forecast different from B.C. Hydro's? one participant asked. Early in the season, it isn't, Fero replied; we're obligated to use their forecasts up to a certain point. As the season progresses, we start making our own runs, and may begin to question B.C. Hydro's numbers if we see something different.

Fero began the more formal portion of his presentation with a plot of average snowpacks at the current time; in general, he said, snowpacks are well below average throughout the Pacific Northwest. Do you have the same confidence in your modeling tools in these kinds of outlier, low-flow years that you have in normal or above-average years? Glen Traeger asked. I don't have a great deal of comfort with the forecast in any year, Fero replied; the only thing I can guarantee is that my forecast will be wrong. We make as many different runs, using as many different tools, as possible; however, the bottom line is that it is extremely difficult to predict the future.

Why don't you assume anything other than average precipitation into the future? McGrane asked. We can do that, but on January 1, it's too early to say this won't be an average precipitation year from here on out, said Fero. If, as the season progresses, the current pattern doesn't change, after another month or so, we'll probably start making some "what-if" types of runs, he added. At this point, the assumption of normal precipitation is the best we can do – we take our responsibility very seriously, he said, and at this point, we don't see a compelling reason to assume that precipitation will not be within the normal range.

What are you seeing as far as temperature deviations from normal this year? another participant asked. Harold Opitz replied that it has been a mild winter to date; there may be some slight below-normal departures between now and February, but the RFC doesn't foresee any strong departures at this point. The trend is toward slightly above-average temperatures beginning about mid-February, he added.

Can we talk a bit more about how your forecasts are developed? Turner asked. We look at snowpack, temperature and, of course, precipitation, Fero replied; again, in December, precipitation was well below normal through most of the Columbia River Basin. He put up a plot showing the data points for Hungry Horse inflow, January-September, and explained how this information is used, in combination with other sources of data, to develop forecast inflow at that project. Kyle Martin noted that the quality of the early-bird forecast is different than the quality of the final forecast, because the early-bird forecast uses only about half the data points that the final forecast does. Opitz noted that this is not precisely true; the number of data points used for both forecasts varies from month to month.

We actually put out three forecasts, said Fero – final, mid-month and early-bird. The final forecast, as Kyle noted, uses the most data points. Do you coordinate these forecasts with other agencies? Traeger asked. We do coordinate closely with the Natural Resources Conservation Service to develop consistent basin-by-basin values, Fero replied – we try to develop a number both agencies can live with. He added that the RFC is in the process of switching over to the more sophisticated Extended Streamflow Prediction (ESP) model.

Next, Fero spent a few minutes discussing confidence intervals, noting that the RFC uses a 95%-5% confidence interval. What this says, in essence, is that 90% of the data points fall within that range, with 5% of the data points on either side of the bell curve.

Opitz invited any interested TMT participants to visit the RFC to see how the forecasts are developed, and to get answers to any questions they may have. He asked Henriksen to coordinate a site visit, if the TMT feels that would be useful – you could even use our conference room to hold a TMT meeting there, if you wish, he said.

6. Water Management Plan Comments.

Turner said he had hoped to have some discussion today about what the TMT would like to see in the 2001 Water Management Plan, now that the final Biological Opinion has been signed. He said it should be possible to update the tables in the 2000 WMP to reflect the January final water supply forecast prior to the January 24 TMT meeting. In the interim, he said, we need to consider what additional elements may be needed in the 2001 Water Management Plan to accommodate the requirements laid out in the new BiOp.

Nielsen noted that it will probably be necessary to find a way to address the question of the role of the performance standards described in the new Biological Opinion within the in-season management process. The group also discussed the linkage between the one- and five-year plans called for in the BiOp and the Water Management Plan. After a few minutes of additional discussion, McCarty suggested that the TMT review the 2000 Water Management Plan and provide any comments or suggestions directly to Turner.

7. Other.

A. Impact of Current Climate Forecast on Future Operations. Martin distributed a handout, "Impact of Climate Forecasts on 2001 Seasonal Flows," dated January 10. He said that, based on CRITFC's spreadsheet model, which takes into account future climatic forecast information, 2001 will be an extremely dry water year; climatologist Theodor Landscheit of Nova Scotia is predicting that an El Nino cycle will begin in February of this year. In addition, it appears likely that 2001 will be an early runoff year, with higher-than average temperatures in February, March and April. The bottom line, said Martin, is that CRITFC is recommending the following actions:

- Decrease outflows at all projects to minimum, or near minimum, using the CRITFC spreadsheet for guidance, and conserve that water for spring and summer operations, given the current and anticipated dry conditions.
- Implement altered flood control operations, or no flood control operations, at Hungry Horse, Libby, Albeni Falls and Dworshak to conserve water for spring and summer operations.
- Have the Reservoir Control Center and River Forecast Center start the spring SSARR model in early March.
- Generate a SSARR run with an "Early-Hot" temperature sequence.
- Make the results of the full SSARR runs available to CRITFC and its member tribes.

Martin noted that, here of late, the RFC's precipitation forecasts have been less-accurate than usual; they predicted January precipitation to be above-average, but to date, that precipitation has not materialized, nor does it appear likely to materialize, at least given the forecast for the next 10 days or so.

Martin went briefly through the information in his packet, touching on expected spring and summer flows at Priest Rapids, McNary and Lower Granite, as well as forecast inflow, outflow and elevations at Arrow, Hungry Horse, Libby, Queens Bay, Albeni Falls, Grand Coulee, Dworshak, Brownlee, Lower Granite, Priest Rapids and The Dalles. He also provided a summary table of forecast average monthly flows at each project for the period of January 1-September 30, 2001. Martin said this plan will be presented to the tribes next week.

Anyway, those are our recommendations for now; if anyone would like to contact me after the meeting, I would be happy to answer any questions you may have, Martin said.

What about CRITFC's requests regarding the SSARR – would that be doable? McCarty asked. What time frame? Turner asked. Beginning in early March, Martin replied. Let's keep talking about that, said Turner – if temperature and precipitation do start to move toward normal, there may be less of a need to do that. At this point, we're planning to start the SSARR run on March 19, said Opitz.

Turner added that, if any TMT participants are interested in looking on while the SSARR run is developed, they are welcome to visit the RCC one Tuesday in the future, possibly January 23.

8. Next TMT Meeting Date.

It was agreed to convene a TMT conference call at 2 p.m. Wednesday, January 17, to review current operations and updated Ives Island redd survey information. The next face-to-face meeting of the Technical Management Team was set for Wednesday, January 24. Meeting notes prepared by Jeff Kuechle, BPA contractor.

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